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## NOTES ON THE EARLY STAGES OF SOME MOTHS.

BY L. W. GOODELL, AMHERST, MASS.

### *Mamestra adjuncta* Guen.

Larva, 1 example—Body smooth, thick and uniform to the 11th segment, from which it tapers abruptly to the end. Cinnamon brown; a large sub-dorsal, velvety, dark brown shade on the 4th, 5th and 11th rings, and on each of the remaining rings, except the three first and last one, is a dorsal curved line, and two small roundish spots of the same color; two larger, square, dark brown dorsal spots edged with yellowish-white, on the first ring. Head roundish, as wide as the body. Venter dark brown. Spiracles white, edged with dark brown. Length when full grown, 1.4 inches. Changed to a pupa Aug. 30. Feeds on *Pteris aquilina* (common brake).

Pupa—Length 0.7 inch; subterranean; black, of the usual form, with a slender forked spine. Imago, June 27.

### *Apatela hamamelis* Guen.

Larva, 9 examples—Body of uniform thickness, with a few short, scattered, whitish hairs on the sides. The color varies from pale yellow to yellowish-red. A row of connected, triangular, dark brown spots on the back, and obscure shades and spots of pale brown on the sides. Venter bluish-green. Head round, flattish in front, as wide and concolorous with the body. When not feeding it rests with its head turned to the side of the body. Average length, 1 inch. Feeds on the Chestnut. About the last of August they make cocoons of bits of wood and grains of earth on or near the surface.

Pupa—Length 0.5 inch, of the usual form and color. Imagines appeared June 3rd to 9th.

*Eupithecia absynthiata* Linn.

Larva, 4 examples—Body slightly attenuated posteriorly. Color pale red; an indistinct, brownish, broken dorsal stripe on the eight middle rings, and a wavy, pale yellow line on each side. Venter and anal prolegs tinged with bluish. Head as wide as the prothoracic ring, flattish and concolorous with the body. Length when fully grown, 0.6 inch. Found feeding on the flowers of the Cockscomb (*Celosia cristata*). Sept. 28th to 30th they made rather brittle cocoons of grains of earth just beneath the surface.

Pupa—Length 0.20 to 0.24 inch; obtusely conical; wing cases and anterior part of the thorax dark greenish; abdomen yellowish-brown. Imagines Nov. 4th to 10th.

*Tetraxis lorata* Grote.

Larva, 1 example—Body attenuated anteriorly; 2nd and 11th rings slightly swollen. Color, when about half grown, light gray, tinged with brownish and variegated with ash; when fully grown, dark brown mixed with light brown and gray. There are about eight pairs of small, pointed, black warts on the back. Head a little wider than the prothoracic ring, not retractile; brown, with two small black spots, edged below with white in front. Length when full grown, 1.2 inch. Feeds on the Sweet Fern (*Comptonia asplenifolia*). Sept. 22nd it spun a thin cocoon, mixed with bits of leaves, and was transformed to a pupa on the 25th.

Pupa—Length 0.6 inch. Thorax and wing cases pale wood color, densely speckled with brown; abdomen reddish, speckled with brown; a row of black spots on each side, and a small, black dorsal spot on the anterior part of the thorax. Caudal spine flattened and rather short. Imago disclosed Jan. 20th by artificial heat.

*Ephyra myrtaria* Guen.

Larva, 23 examples—Body smooth and of uniform width; reddish brown striated with ochreous; a large sub-dorsal dark brown shade on each of the six middle rings, and a darker dorsal stripe. Head round and slightly bifid, a little paler than the body and larger than the prothoracic segment. Average length when fully grown, 0.7 inch. It is very much attenuated when young and of a brighter color. Feeds on Sweet Fern (*Comptonia asplenifolia*) and on the Huckleberry (*Gaylussacia*). When about to change to a pupa it fastens its anal prolegs firmly to the

under side of a horizontal twig, and slings itself by spinning a thread of silk over the middle of its body, which is fastened by two strands at each end.

Pupa—Widest and truncated anteriorly, tapering regularly to the tail, and with two ear-like protuberances in front. Color, body very pale flesh color, with the abdomen more or less thickly spotted with black; wing cases paler than the body, with a black streak along the upper margin; a small dorsal black spot on the anterior part of the thorax.

A variety of this species, of which I found thirteen examples, is dark brown with black sub-dorsal shades, which are edged below with grayish; there are also two small black spots on the back of the first ring of the body.

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#### ON DEILEPHILA CHAMCENERII AND LINEATA.

BY THE EDITOR.

Both these members of the Sphinx family are found more or less plentifully in nearly all portions of the Provinces of Ontario and Quebec; *lineata*, as far as we have been able to learn, is more abundant in Ontario and *chamcenerii* in Quebec. They are both very handsome moths, and so strong and active when on the wing that it is difficult to capture them without injury. About twilight or a little later their period of activity begins, when they may be seen flitting about with spectre-like rapidity, hovering like the humming bird over flowers, into which their long and slender tongues are inserted in search of the nectar there stored.

They are much alike. In both the ground color of the fore wings is of a rich greenish olive, crossed about the middle by a pale buff stripe or bar, extending almost the whole length to the tip, while along the outer margin there is another band or stripe nearly equal in width, but of a dull ashy color. The hind wings are small, with a wide rosy band, which covers a large portion of the wing, while above and below, the color is almost black, the hinder margin being fringed with white. In the markings on the bodies they also resemble each other very much. There is a line of white on each side, extending from the head to the base of the thorax, and other less prominent longitudinal lines of white on the thorax.

The abdomen is of a greenish olive, having a reddish hue on the sides and spotted with white and black.

There are differences, however, which would enable the most casual observer to separate them without difficulty. There is a difference in size, *lineata* (fig. 3) being the largest, measuring when its wings are spread about three and a half inches, while *chamenerii* (fig. 2) rarely exceeds two and three-quarter inches. The central band on the fore wings in *chamenerii* is wider and more irregular, but the most striking point of difference between the species is that the veins of the fore wings in *lineata* are distinctly margined with white, a character entirely wanting in *chamenerii*. These differences will be readily appreciated by reference to the figures.

The larva of *lineata* varies considerably in color. Mr. Riley says: "The most common form is that given at fig. 4, where the body is of a yellowish green, with a prominent sub-dorsal row of elliptical spots, each spot consisting of two curved black lines, enclosing superiorly a bright crimson space and inferiorly a pale yellow line, the whole row of spots being connected by a pale yellow stripe edged above with black. In some specimens these eye-like spots are disconnected, and the space between the black crescents is of a uniform cream color. The breathing holes are either surrounded with black or black edged with yellow. The other form of the caterpillar (see fig. 5) is black, with a yellow line along the back and a series of pale yellow spots and darker yellow dots. This dark form is, however, subject to great variation, some specimens entirely lacking the line along the back."

According to Mr. Riley, it feeds upon purslane; turnip, buckwheat, water melon, and even grape and apple leaves, and is found in the larval condition during the month of July. Mr. Pyle, of Dundas, Ontario, has found it feeding on the common plantain. When full grown it is said to descend into the ground, where within a smooth cavity it changes into a light brown chrysalis, emerging as a moth in September.

#### LARVA OF D. CHAMENERII.

Described from three specimens found feeding on grape, July 5th.

Length, two and a half inches, onisciform.

Head small, rather flat in front, slightly bilobed, and of a dull pinkish brown color, with a black stripe across the front at base. Basal half of



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.

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palpi yellow, upper half black. Mandibles black, with a patch of yellow between them and the black stripe.

Body above deep olive green, with a brownish tinge and a polished surface. Second segment with a cervical shield similar in color to head, its sides dull greenish, with two yellow dots. There is a pale yellowish dorsal line terminating at the base of the caudal horn; each segment from 3rd to 12th inclusive has a pale yellow spot on each side the dorsal line, about half way towards the stigmata, those on 3rd segment small and almost crescent-shaped, on 4th larger and nearly round, 5th still larger, nearly round, 6th, 7th, 8th, 9th, 10th and 11th about equal in size, nearly oval and larger than those on 5th. On 12th segment the spot is more elongated, and extending upwards, terminates at the base of the caudal horn. There is a wide but indistinct blackish band across the anterior part of each segment, in which the yellow spots are set; the sides of the body below the spots are thickly sprinkled with minute raised yellow dots. Caudal horn long, curved backwards, red, slightly tipped with black, and with a roughened surface; terminal segment dull pinkish; stigmata oval, yellow, shaded around with dull black.

Under surface much paler, color dull pale pinkish green, the pink color predominating from 5th to terminal segments inclusive, and with a number of very minute raised yellowish dots placed chiefly along the sides. Feet black; pro-legs pink, with a patch of black on the outside of each. One specimen spun a light web, binding a portion of the leaf in the manner of *pampinatrix*, within which it changed to chrysalis on the 10th of July, and from this the imago appeared on the 28th of the same month. The other two larvæ died before completing their transformations.

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## SIX NEW NOCTUÆ.

BY A. R. GROTE,

*Director of the Museum, Buffalo Society Natural Sciences.*

### *Eustrotia mariæ*, n. s.

Fore wings pale caraneous brown shaded with dusky; terminal space more blackish. Median lines fine, black, approximate, angulate. A curved sub-basal shade on internal margin. Reniform narrow, outwardly curved or



oblique, white and contrasting, set in a dark suffusion of the disc. Subterminal line even, with a costal angulation. A fine dark terminal line at base of concolorous fringes. Hind wings pale, shining with traces of median shades and the fringes slightly carneous; abdomen concolorous with hind wings. Beneath fore wings dusky, hind wings pale with mesial shade. Fore wings above showing pale costal dots; beneath there are pale costal shades and the costal angulation of the s. t. line is apparently reflected. *Expanse* 21 mil.

Several specimens taken on the Lake Shore, near Buffalo, N. Y., in July, by Miss Mary Walker, after whom the species is named.

*Thalpochares orba*, n. s.

A large form resembling *mundula* in color and cut of wing, but stouter and with longer palpi. Its generic position is not assured. Fore wings dark brown, with the narrow median space almost black. The median lines are even, pale ferruginous brown, contrasting. The outer or t. p. line occupies almost the centre of the wing and is not angulate opposite the cell as is *mundula*, but obtusely bent. A faint festooned line follows the t. p. line. The irregular subterminal is relieved by a following pale shade. The reniform is a small ringed spot. No traces of the other stigmata. Fringes concolorous, cut outwardly with pale. There is a delicate violet reflection over the fore wings. Hind wings and abdomen blackish fuscous. Beneath fuscous with discal dots and a common even mesial line relieved outwardly by pale shading. *Expanse* 21 mil. Loc., Demopolis, Alabama.

*Spragueia plumbifimbriata*, n. s.

Among the specimens belonging to this genus collected by Mr. Bel-  
frage, in Texas, are several under the number "127" which I cannot refer to *dama* or *leo*, although closely allied to these. The fringes in *dama* are orange colored with a leaden fleck opposite the cell; of *leo* lead-color except at the internal angle, where they are fulvous. In the new species they are entirely plumbeous. The thorax and fore wings at base and along costal region are very pale yellow, like the palest tint in the other two species. The rest of the wing is taken up by two broad lead-colored patches or bands, separated by a narrow rusty line at the middle of the wing from the middle to internal margin. The first band stretches narrowly to costa without the first transverse line, which is barely indicated



The discal spot is situate without and above the extremity of the mesial line, which is apparently the lower portion of the transverse posterior. The terminal margin is narrowly fulvous. Hind wings and abdomen pale fuscous, not so dark as in allied species. Beneath paler than in its congeners. *Expanse* 14 mil.

This cannot be the *onagrus* of Gueneé, which seems to me to be the same species as *leo*.

*Fruva*, n. g.

Although the neuration agrees with *Spragueia*, the three forms here included differ by the bulging clypeus and the infra-clypeal plate. In *fasciatella* this is exaggerated and the surface of the clypeus is flattened or slightly depressed, reminding us of *Tarache*. The species are rather longer winged than *Spragueia* (*agrophila* of Gueneé in part) and differ by their plain unspotted fore wings. The three species I would here include are *F. tortricina* (Zell.), *F. fasciatella* Grote (which is the generic type) and the following :

*Fruva obsoleta*, n. s.

Allied to *tortricina* rather than to *fasciatella*, but resembling the latter more in color. The front does not seem to be shallowly depressed. Entirely plain colored. Fore wings fuscous, overlaid with ochrey scales, without markings. Hind wings pale fuscous with whitish fringes. Beneath whitish, glistening; fore wings with blackish disc and fringes, the latter whitish on secondaries. *Expanse* 19 mil. Algonquin, Illinois, June 1; Dr. Nason.

The species *Tarache angustipennis* comes very near *Fruva*, and may ultimately be removed to the latter genus.

*Tripudia*, n. g.

The little species with simple and rather short antennæ belonging to this genus are among the frailest of the family. They are dark-colored, beneath shining, and remind one of certain *Pyralidæ*. The body parts are small in proportion to the wings; the abdomen not exceeding the secondaries. The wings are wide, outwardly full. Eyes naked, palpi rather long, divaricate, pointed. All the parts are closely scaled. Tongue rather stout. Legs unarmed. (The neuration should be examined, but I have only two specimens and cannot now destroy either.)

The first and larger species is *Tripudia quadrifera*, the *Erastris quadrifera* of Zeller from Mazatlan, Mexico, represented by a single fresh specimen from Texas, received by me from Mr. Meske. This species is totally dark with a velvety patch on median space. On the hind wings both species beneath are distinctly marked.

*Tripudia flavofasciata*, n. s.

Very small, with a broad yellow band filling up the sub-basal space obliquely on primaries. Base of the wing blackish. Beyond the yellow band the wing is blackish with scattered pale or shining points, the ornamentation difficult to trace. The subterminal line is indicated very near the margin by pale festoons. Hind wings totally blackish as in *quadrifera*. Beneath the fore wings are blackish, with pale discolorous internal margin as in *quadrifera*. The hind wings show a discal spot ringed with pale and a pale subterminal line very near the margin. *Expanse* 7 mil. Demopolis, Alabama, collected by myself in the day time hovering over flowers, in the month of June.

In the ornamentation of *quadrifera* Prof. Zeller sees a resemblance to *Plusia*. Both species must be added to the "List of North American Noctuidæ."

*Glaea carnosus*.

The male of this species has the antennæ pectinate. A specimen has been sent me by Mr. Roland Thaxter, taken on Long Island. It will thus fall into a distinct section of the genus. We must also separate from the other species *tremula* and *pastillicans* (perhaps too closely allied to be distinct species) on account of the dorsal thoracic ridge of hair. According to a determination by Mr. Morrison, *venustula* is a synonym of *sericea*. I am still at a loss, however, to account for the statement that the claviform spot is marked in white. None of my specimens in this genus show any trace of the claviform spot.

*Antaplaga*, n. g.

Belongs to the series of Noctuid genera related to *Sehinia* Hübn. The palpi are short; tongue moderate; antennæ simple. Legs slender; fore tibiæ with a long and rather large, pointed claw. Vestiture of the body and appendages consisting of flattened scales. Front with a naked protuberance, arising from a narrow rim which is exposed inferiorly; the

protuberance rises above, absorbing the rim, and its surface is irregularly roughened. The structure differs from *Fala*, in which a wedge-shaped protuberance arises from a cup; or from *Plagiomimicus*, which has the cup empty. The scaly vestiture and the shape of the wings are distinctive. These latter remind one of *Pippona*. The costal margin of primaries is long, external margin very oblique, apices produced, internal margin comparatively short.

*Antaploga dimidiata*, n. s.

Head, thorax and basal third of fore wings white. Beyond, the wing is blackish brown, limited obliquely and a little unevenly from the white basal portion by the difference in color. A whitish subterminal shade. A discal mark obscurely indicated on the darker portion of the wing. Hind wings pale fuscous with white fringe; beneath whitish. Fore wings beneath fuscous. *Expanse* 30 mil. *Hab.* Colorado, Prof. Snow.

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TINEINA FROM TEXAS.

(Continued from February No.)

BY V. T. CHAMBERS, COVINGTON, KY.

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BLASTOBASIS.

My knowledge of this genus is derived wholly from Prof. Zeller's paper. It is equal in part at least to *Holocera* Clem. (I have to thank Prof. Riley for calling my attention to the fact that in some of my references to this genus the name is incorrectly given as *Holocera*.)

*B. sciaphilella* Zell., as described and figured, differs from *H. triangularella* Cham. as to the position, size and form of the triangular spots on the wings. *Sciaphilella* has distinct opposite, comparatively small costal and dorsal triangles, while *triangularella* has no dorsal triangle, but a single large costal one, wide upon the costa and crossing the fold, and it also has the apical part of the wing distinctly streaked and clouded with brownish gray. They do not seem to differ otherwise.

In a former paper I have referred to *H. glandulella* Riley some other Texas specimens differing slightly from typical bred specimens of *glandulella* and from Prof. Riley's description. The form described by Prof. Zeller as *B. nubilella* is one of these, and is, I think, only a variety of *glandulella*. Prof. Riley concurs with me in this, and he thinks *triangularella* and *sciaphilella* are also varieties of it. I am strongly inclined to concur with him. I have made some remarks on this subject in the former paper.

*Argyresthia austerella* Zell.

*A. undulatella* Cham.

I have never met with a specimen quite so strongly marked as that figured by Prof. Zeller, but I have elsewhere (*ante v. 6, p. 10*) remarked on the amount of variation in the intensity of the markings of the species. I have known it many years, and while I write (June 3rd, 1876) it swarms in hundreds around elm trees in this region. It is not improbable that the dark markings are deeper in more southern localities. Other species of *Argyresthia* have the habit of undulating or "see-sawing," but none that I have seen practice it to such an extent as this. Prof. Zeller first described it.

*Actole bella* Cham.

Before I saw Prof. Zeller's description of *Heliosella gracilis*, I thought it not improbable that it would prove to be this species, because of the resemblance in structure of the head and its appendages in the two genera and the fact that both were taken in the same locality, where *A. bella* seems to be not uncommon. They are, however, quite different creatures. *Actole* perhaps approaches *Helissines* as nearly as it does *Heliosella*. I have, however, no acquaintance with either genus other than through written accounts of them, having never seen a species of either. *A. bella* resembles *Chrysoclista lineella* in ornamentation more than it does any other species known to me.

#### COLEOPHORA.

*C. bistrigella*.

With fresher specimens before me, I amend the description of this species. Snowy white, in some lights silvery. The fore wings have two rather pale ochreous-yellow streaks from the base, one of which is above

the fold and goes to the tip, its basal half being margined above by a line of brown scales, and its apical part margined similarly towards the fold. The other streak is just within the dorsal margin, and goes to the dorsal ciliae. *Al. ex.* a little over  $\frac{1}{2}$  inch.

## LAVERNA.

*L. anotheraeella* Cham.

This is evidently the species which had been previously described as *Phyllocnistis magnatella* by Prof. Zeller, "*Bistrage*, &c., 1873," and I confess to feeling some surprise on finding it referred to *Phyllocnistis*, though after reflection I find the mistake in locating it there not so great as it at first appeared to be. Still I think it is more properly placed for the present in *Laverna* than in *Phyllocnistis*. I placed it with some hesitation in *Laverna*, and admit that it is not a true *Laverna*, and I think a new genus will ultimately be erected for it. Indeed, I at first prepared the diagnosis of such a genus, but finally considering the somewhat heterogenous character of the genus *Laverna*, I ultimately concluded not to separate it from that genus at present. It may be that I attribute too much importance to neururation as affording generic characters; nevertheless, I think it probable that in the scarcity of specimens Prof. Zeller did not examine the neururation of this species, or he would not have referred it to *Phyllocnistis*, and I feel still more confident that he would not have so done had he known the larva and its habits; while, on the other hand, I perhaps should not have been surprised to see it referred to *Phyllocnistis* had I not known its neururation, and its larva and larval habits as given by Miss Murtfeldt in CAN. ENT., v. 7, p. 31. Like Prof. Zeller, I was struck by its resemblance in ornamentation to *Lyonetia*, so that my MSS. specific name, before I knew its larval habits, was *lyonetiella*.

My reasons for venturing to differ from Prof. Zeller as to its generic affinities are as follows: 1st—Considering the minute size of all other known species of *Phyllocnistis*, and their close resemblance in ornamentation, the much greater size (nearly three times the *alar ex.* and nearly four times the weight) of this species and the difference in ornamentation (which, however, bears some resemblance to that of a *Phyllocnistis*), I should have suspected structural differences as great as those of size. 2nd—The characters drawn from the head and its appendages, while very nearly those of *Phyllocnistis*, do not differ in any important particular from those of some species of *Laverna* and of some other genera allied thereto;

greater differences, for instance, exist between the palpi of *L. langiella* and *L. laetiella* than are found between the latter and *magnatella* Zell. 3rd—The neururation of the wings places the species among *Elachistidae* and not in *Lyonetidae*. The neururation of the fore wings is exactly that of *Laverna Staintoni*, as figured *Ins. Brit.*, v. 3, except that in this species the apical branch of the median vein goes to the apex instead of to the dorsal margin before it. As in *Laverna*, the submedian is furcate at the base, which is not the case with *Phyllocnistis*; and though, owing to the peculiar ornamentation of the apex, the fore wings appear to be decidedly caudate, yet when denuded, they are found to be scarcely more so than in *Laverna atra* as figured *loc. cit.* The form of the hind wings is very nearly that of *L. epilobiella*, figured *loc. cit.*; and the neururation is identical with it except that the superior branch of the subcostal goes to the apex instead of to the costal margin just before it, and *the cell is indistinctly closed*. The fold and the dorsal vein are both distinct. In all these particulars it differs greatly from *Phyllocnistis* and agrees with several well recognized species of *Laverna* as well as, if not better, than they do with each other. 4th—The larval habits, as described by Miss Murtfeldt, *CAN. ENT.*, 7, p. 31, are those of several species of *Laverna*, but of no known species of *Phyllocnistis*, and the larva, while not closely resembling any *Laverna* larva known to me, is still more unlike that of *Phyllocnistis*, in fact, totally distinct from it, having sixteen feet. For these reasons I think its affinities are with *Laverna* and not with *Phyllocnistis*. The specific name *magnatella* Zell. has priority over *anotherælla*. *Magnatella* is very appropriate if the species belongs in *Phyllocnistis*, but not if it is a *Laverna*. I have never seen *L. eloisella* Clem., but I suspect that it will be found congeneric with this species.

I find that in the description of the species I have inadvertently omitted to mention the large tuft of raised scales margined behind with brown, and the short, longitudinal, black line behind it, situated within the margin at the base of the dorsal ciliæ, between the "two streaks which diverge from the small tuft within the dorsal margin before the ciliæ." See v. 7, p. 31.

*L. unicristatella* Chamb. previously described by Zeller as *L. definitella*.

## DESCRIPTION OF A NEW LIMACODES.

BY LEON F. HARVEY, M. D., BUFFALO, N. Y.

*Limacodes latomia*, n. s.

This species is similarly sized with *y-inversa*, or perhaps a little larger. It is less brightly colored. The fore wings are dusky ochre with two blackish lines; the first crossing the wing a little obliquely at the middle; the second before the apex from costa to external margin. The lines do not meet at costa as in its ally. The space between the lines is *discolorous*, being somewhat grayish. Hind wings more yellowish, concolorous. Beneath immaculate, like hind wings above. Thorax like fore wings. Antennæ simple. Several specimens taken by Belfrage in Bosque Co., Texas; No. 572, May.

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NOTES ON SOME SPECIES OF MELOE OCCURRING IN  
TEMPERATE NORTH-EASTERN AMERICA.

BY F. B. CAULFEILD, MONTREAL, P. Q.

The life history of *Meloe*, as given by the Editor in the December No. of this journal, agreeing very closely with that of *M. angusticollis* Say, as far as my knowledge of its habits will permit me to judge, it occurred to me on reading Mr. Brodie's very interesting notes in the January No., that unless we have in this country a double brooded *Meloe*, some one must be referring another species to Say's *angusticollis*.

We have in temperate North-eastern America several species of *Meloe* closely resembling each other in general appearance, two of which are widely distributed, sometimes, probably often, occurring in the same localities, but I think at different seasons; the first, *M. angusticollis* Say, appearing early in May and disappearing before or about the middle of June; the other, *M. americanus* Leach, appearing in the latter end of July or beginning of August, and lasting until after the early frosts.

Having compared specimens of what I believed to be *angusticollis* with Say's description, I felt satisfied that I had that species, but I took *americanus* Leach to be *rugipennis* Lec., from having compared it with



specimens of *americanus* labeled *rugipennis*, in the collection of the Montreal Natural History Society, and from records of the capture of *rugipennis* in other localities at dates corresponding with the time of appearance of *americanus* here. However, as our *Meloes* resemble each other very closely, and as the description of *rugipennis* did not seem to suit the specimens labeled as that species, I did not feel justified in trusting to my own judgment in the matter, and sent a specimen of each species to Dr. LeConte, with the request that he would determine them for me. Having examined them, Dr. LeConte informed me that my determination of *angusticollis* was correct, and with his consent, I give the following corrected synonymy, which he very kindly sent to me :

"1. *M. ANGUSTICOLLIS* Say = *rugipennis* Lec. --Punctures of head and prothorax coarse and deep. This has been considered by some author, as = *VIOLACEOUS* Marsham. of Europe, but I have not compared them ; one specimen in my collection was thus labeled.

"2. *M. AMERICANUS* Leach--*angusticollis* Lec. Punctures very fine and prothorax still narrower."

As Say's description of *angusticollis* is very good, I give it for the benefit of those who may not have access to the work in which it is given, viz., Jour. Acad. Nat. Sci., Phil., 3, 280 :

"*Meloe angusticollis*. Thorax narrower than the head, elytra and abdomen violaceous. Inhabits Pennsylvania. Body dark violaceous, punctured ; head with profound punctures, an impressed, longitudinal, abbreviated, acute frontal line, and a transverse, elevated, obtuse one connecting the bases of the antennæ. Thorax slender, narrower than the head, profoundly punctured, widest rather before the middle, and narrowed at tip and base ; base emarginate and slightly margined. Elytra rugulose dark bluish-violaceous. Feet slightly hairy ; spines of the tibia and nails ferruginous. Abdomen slightly rugulose, dark greenish or violaceous ; tergum, each side black, opaque."

*M. americanus* Leach is a smoother and more delicate looking insect than *angusticollis*, and the blue is inclined to shade into green in certain lights, especially on the head and thorax ; the punctures are so fine as to be almost invisible to the naked eye (in *angusticollis* the coarseness of the punctures give it a slightly roughened appearance). The acute, impressed frontal line, so characteristic of *angusticollis*, is wanting in *americanus*, and altogether it is a softer and more oily-looking insect.

*M. angusticollis* Say, makes its appearance here in the beginning of May, very soon after the snow has melted. I first observed it in 1872; I cannot now give the exact date, but it was early in May. I found three specimens on Montreal Mountain, one male and two females. Referring to my notes, I find the following dates for them in 1874: May 2nd, one specimen, Hochalaga, Montreal; May 13th, one specimen, Montreal Mountain; May 20th, eight specimens, Hochalaga, Montreal.

I did not observe them in 1875. On June 10th, 1876, the Montreal Natural History Society held their annual field day at St. Hillair, between twenty and thirty miles south of Montreal, and I was given a specimen of *Meloe* taken there on that day; unfortunately I did not preserve it, and cannot now be certain what species it was, but at the time I did not think it different from those I found in May, and as it was a female with the abdomen very large, I think it probable that it was the same.

I did not study their habits closely, as my spare time was chiefly devoted to Lepidoptera, but I only noticed them on warm, sunny days; I did not find any under stones, but I think it not unlikely that they may seek shelter under stones during wet or cold weather, as I have sometimes found to be the case with *Cicindela sexguttata*.

Mr. J. M. Jones, of Halifax, N. S., in a communication dated June 4th, 1871, CAN. ENT., vol. 3, p. 37, says: "*Meloe angusticollis* very abundant on Halifax common about the middle of May, now totally disappeared."

Mr. A. S. Ritchie, in his "List of Coleoptera taken on the Island of Montreal," records *M. angusticollis* Say, date of appearance not given; Coleoptera determined by Dr. Horn. This, I think, would be *M. americanus* Leach. In the same list Mr. Ritchie records *M. rugipennis* Lec. This, I think, would be *M. angusticollis* Say.

Mr. J. Pettit, in his "List of Coleoptera taken at Grimsby, Ont.," CAN-ENT., vol. 2, p. 132, records *M. angusticollis* Say. This is probably *M. americanus* Leach.

Mr. Wm. Couper, in his "List of Coleoptera taken at Quebec and other parts of Lower Canada," published at Quebec in 1864, records *M. angusticollis* Say as "common on potato-vines," no date given. As most of Mr. Couper's Coleoptera were named by Dr. LeConte, this also is probably *M. americanus* Leach.

I have no record of the capture of *M. americanus* Leach, myself, but

if I remember rightly, I took a *Meloe* rather late in the season, on Montreal Mountain, last summer. I thought at the time it was a soft, rich looking specimen, but I did not take a note of it. On reading Mr. Brodie's paper, I examined my specimens of *Meloe* carefully, and found a specimen of *M. americanus* Leach in a box of duplicate Coleoptera taken on the Island of Montreal, but at the time I did not know what it was. Having compared it with specimens labeled *rugipennis*, in the Montreal Natural History Society's collection, I found it to be the same; this specimen I afterwards sent to Dr. LeConte, who gave me the correct determination.

Mr. P. Kuetzing has kindly given me a pair of this species, taken by him in the latter end of July of last season (1876), in this neighborhood. This is the earliest record of the appearance of *americanus* known to me, but as Mr. Kuetzing only found the pair, and as the abdomen of the female is quite small, we may, I think, reasonably infer that they had just emerged, and were the pioneers of the August brood.

Mr. G. B. Pearson informs me that he has seen a species of *Meloe* common here during the latter part of summer, and noticed them late in October; doubtless the same species.

Mr. H. H. Lyman kindly lent me three specimens of *Meloe* for examination. One is *M. angusticollis* Say; the others are *M. americanus* Leach. Mr. Lyman informs me that the specimens of *americanus* were taken at Portland, Me., in August, 1873, but cannot tell when or where the other was taken. He says, however, that if it is *angusticollis*, it was probably taken at Montreal, as he never went down to Portland before the middle of July.

In a "List of Coleoptera found in the vicinity of Montreal," by W. S. M. D'Urban, Canadian Naturalist, vol. 4, p. 307, he records *rugipennis* Lec. as common. Mr. D'Urban states that nearly all the species were determined by Dr. LeConte.

In a "List of Coleoptera collected in the Valley of the River Rouge and neighboring Townships," by W. S. M. D'Urban, Geological Survey of Canada, report of progress for 1858, p. 226, he records *M. rugipennis* Lec., Hamilton's Farm, 31st August, and Grenville, 14th October.

In a List of Coleoptera collected on the south-east side of the St. Lawrence, from Quebec to Gaspé, and in the Counties of Rimouski, Gaspé and Bonaventure, by Mr. Robert Bell, jr., same report, p. 247, he records

*M. rugipennis* Lec. "between Metis and the mouth of the Matapedia." The date is not given, but as he records *Colias philodice* "between Metis and Lake Matapedia, August 17th," and as he did not arrive at Great Metis until August 14th, it must have been taken in that month or later. M. D'Urban, who drew up this list, states that Mr. Bell's Coleoptera were determined by Dr. LeConte.

I frankly confess that the records of Messrs. D'Urban and Bell puzzle me, for if the dates given by these gentlemen are correct, and if the specimens taken by them were determined by Dr. LeConte as *rugipennis* Lec., which is *angusticollis* Say, then that species must, I think, be double brooded. I believe, however, that if Dr. LeConte had seen specimens taken at those dates, he would have determined them as *M. angusticollis* Say, which would prove them to have been *americanus* Leach, when the dates would correspond with its time of appearance here, at Portland, and I believe, elsewhere. I am strengthened in this belief by the fact that specimens of *americanus* in the collection of the Montreal Natural History Society are labeled *rugipennis*, a mistake that Dr. LeConte would never have made.

I think Mr. Brodie's notes also point to the conclusion that *americanus* is the species found in autumn; this gentleman could give us important evidence in this matter by carefully comparing his specimens with Say's description, and letting us know which species they belong to. I do not think that any of our *Meloes* are double brooded, but if Mr. Brodie's specimens are the true *angusticollis* of Say, it would seem as if such must be the case, as it seems improbable that a species would be taken in some places in spring, and in others in autumn, if it was not double brooded.

Dr. Packard, speaking of the larvæ of *Meloe* found by him in spring, says: "It is undoubtedly the young of our common *M. angusticollis* Say." If we substitute the name *americanus* Leach for *angusticollis* Say, this statement will, I think, be perfectly correct, unless the larvæ observed by Dr. Packard belong to one of our other species (I only know *angusticollis* and *americanus*).

*M. angusticollis* probably oviposits during the end of May and beginning of June, and by the end of June and during July we might, I think, expect to find the larva. These are, however, points that require careful investigation, as nothing short of rearing the perfect insect will enable us to identify the larva.

I will during the coming season, as far as my time will permit, endeavor to ascertain the dates of appearance, duration, &c., of these species in this locality, and I trust that Entomologists in other parts will do the same, so that the life history of our North American species may be worked up.

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#### IMPORTANT NOTICE.

In consequence of the pressure of other engagements, our Secretary-Treasurer, Mr. J. H. McMechan, has found it necessary to resign his office. Until further notice, our correspondents will please address *all* communications to the Editor.

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#### BOOK NOTICES.

Packard's Half Hours with Insects, Boston, published by Estes & Lauriat, 1877, 12 mo., pp. 384, illustrated, \$2.50, which was originally issued in twelve numbers, has lately been published in book form. We desire to correct some typographical and other errors of importance. Page 187, in explanation of Fig. 187, for Bucculating read Bucculatrix; page 289, line 23, for *Disippus* read *Archippus*, and in line 25, for *Archippus* read *Disippus*; page 305, line 13, for sumac read cottonwood, and on page 306, in explanation of Fig. 236, for sumac gall read vagabond gall.

We cheerfully commend this useful work to our readers.

Report upon the Orthoptera collected by the Wheeler Expedition, by Samuel H. Scudder; 8vo., 17 p. In this paper the author gives much valuable information in relation to the Orthoptera occurring on the eastern slope of the Rocky Mountains; 17 new species are described, and definitions of 8 new genera given. Report of the Hayden Expedition, from the Department of the Interior, containing Brief Synopsis of North American Ear-wigs, with an appendix of the fossil species; 8vo., 12 p. List of Orthoptera collected by Dr. A. S. Packard in Colorado, &c., during 1875; 8vo., 7 p. Notice of a small collection of Butterflies made by Dr. Packard in Colorado and Utah. All by Samuel H. Scudder. We tender our best thanks to the author for copies of these papers.

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